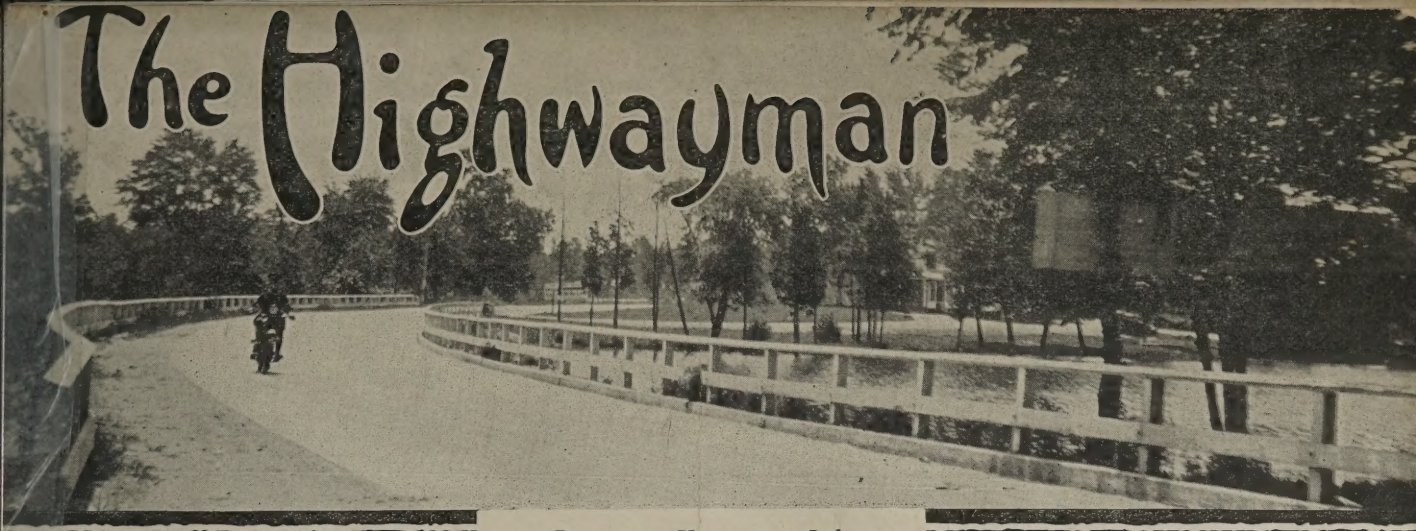


The Highwayman



Route 3, at Hammonton Lake

**The Highwayman Is Out
For More and Better Roads
in New Jersey**

**November, 1922
Vol. II
No. 4**



I Am the Motor

I have clipped the wings of Time; and broken through the barriers of Space.

I have opened the gates of the cities, that those who dwell therein may go as on wings to the open spaces, and find again the sun and the wind and the stars they had forgot; and watch the passing pageant of the seasons—spring mornings that burn with a green flame in the meadows, and summer nights beneath the cool arch of the silent stars, and autumn afternoons, with a dying glory on hill and sky.

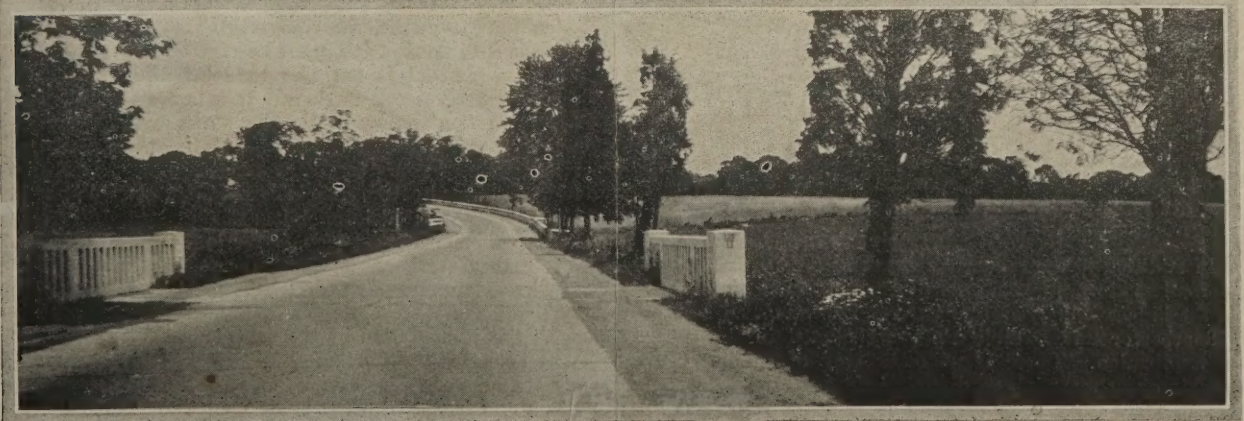
In the busy marts by day, your ear has heard my whirring in a thousand streets. Because of my presence the wheels of industry spin faster;

the work of the world is done in shorter hours.

Through the stretches of the night you have listened to my rumble over the long dark roads, bearing the barter of city with city—the machine that is needed in a hurry, the repair part that is holding up the work of a hundred men; the daily food supply of millions. Over a thousand long roads I rumble on.

I have given much; and one thing have I asked—*roads*. Flowing roads for my spinning wheels; roads to reach into the humble corners, and stretch even to the far places of the earth. So that I may go safely and with speed, and bring my gifts everywhere, and to all.

—F. F. R.



The Highwayman

The Highwayman

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THE HIGHWAYMAN

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If You Want The Highwayman You Must Act Today!

Last month's issue contained an announcement to the effect that the circulation of the Highwayman had grown to such an extent that it would now be necessary to charge a small subscription price for it, if publication was to be continued.

If you want the Highwayman to continue to bring you, month by month, complete information about the roads of your State, and a monthly Bulletin of Detours, *send in your subscription today.*

If we receive subscriptions enough for the year 1923, the Highwayman will be continued. If not, its publication will be suspended. Should the publication be suspended, all unexpired contracts for advertising will be adjusted, and all subscriptions which have been received will be refunded.



"Bigger and Better Than Ever!"

That's What Lee And Charlie Are Saying About This Year's Convention.

"Are you going?"

"Of course I am; d'ye think I'd miss it?"

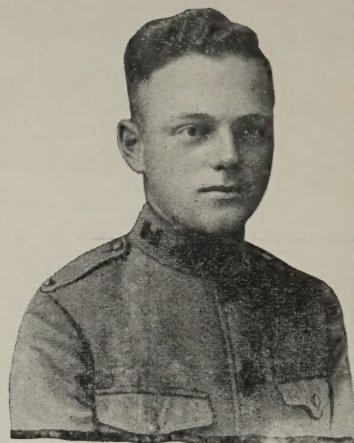
That's what you hear all along the line, in reference to the Highway Department Convention to be held February 14, to February 17.

We have yet to find the party—and there were over five hundred of 'em!—who attended last year's convention, that did not feel they got their time and money's worth.

Equipment Men, Take Notice!

In addition to the regular program of talks on all kinds of road matters, for all sorts of road workers, there will be the big *Exhibit of Equipment and Materials.*

Spaces for this Exhibit are being allotted in the order of application. There is no other way of getting your machinery or materials so directly before all the road men in the State—and a good many from other States—as to show them here. Reserve your space today!



Frederick D. Woodruff

Assistant Superintendent of Maintenance

Fred Woodruff claims the distinction of having been born October 13, 1892, on a farm at or near Somerville, N. J. We don't know just what he means by "on a farm" in Somerville, because by all accounts, Somerville is a real town. However, we will take Fred's word for it.

After attending Grammar and High School in Somerville, he started his engineering career with the County Engineer of Somerset County in 1910, continuing in this position until 1914. From 1914 to 1915, he was employed by Richards & Gaston, Inc., in subway construction on the Brooklyn Rapid Transit. A portion of 1915 was spent with the New York Connecting R. R., at Long Island City, doing drafting work.

In 1915 Fred came with the Highway Department as an Inspector. He continued this work until 1917, at which time he volunteered for services with the 104th U. S. Engineers. Fred went across with the A. E. F. as Lieutenant, and returned to the department in 1919, being assigned to the Maintenance Division, as Assistant Superintendent of Maintenance. If you want to know anything about the state of progress of maintenance work, furnishing and delivering of material or anything else along that line, ask Fred, he knows.

He is the kind of a chap that does not make a lot of trouble about handing out necessary information to those who need it, and consequently wins the respect and liking of all with whom he is associated, or comes in contact with.

Fred is married and has two daughters. He says that he does not belong to any organizations, never received any medals or otherwise distinguished himself beyond the lot of the ordinary individual who sits in the house by the side of the road—a friend to every man.



Ready For The Battle

Snow!

We don't think much about it 'till we get it—we being the users of autos.

But the boys up in Trenton have been thinking about it for weeks. They know that, if the roads are to be kept open for the public, the equipment, the organization, and the *spirit* to do that job, must be ready in advance.

Snow removal is not like road building, that can be done as other work is done. It is more like fighting a fire—you don't know when the alarm will come in, or where it will be, or how serious. The only way is to be ready for any emergency, any time, any where. And the biggest reward of the man who goes out, at midnight perhaps, to fight the driving blizzard that seems bent on tying up a state's road traffic, is the knowledge of the SERVICE they are performing for the public.

The "snow removal" work is handled by a volunteer organization of the employees of the Highway Department, with the co-operation of the contractors.

It is under the immediate direction of Assistant Highway Engineer, Ed. Reed, who would rather stay up all night and battle with the Snow Giant, than eat or sleep—at least, he has been known to do just that.



Alex W. Muir
Superintendent of Maintenance

Alex. Muir might impress the casual observer as being one of the department's prize grouches, after one had been put on the wrong end of a telephone connection, when Alex. got up steam. He is the fellow, you know, that is relied upon to keep communications open with distant points of the State when an ice storm breaks down the telephone wires, and we don't expect that he will use Radio, either, as the boys claim that it will only be necessary, to get him interested and then open the window. Aside from these misleading characteristics, Alex. is one of the most popular men in the department, and is really very human.

He accomplishes what he undertakes, and large credit is due him for the condition in which our State Highways and Detours are maintained. Alex. is the sort of a fellow that would tell you that results obtained were the result of the efficiency of his assistants and associates, but his assistants and associates would say that his strict adherence to his "knitting", good common sense, and the spirit of harmony which he instills in those associated with him, is responsible for the results.

Alex. says he was born in East Orange on July 2, 1886, and attended private schools until 1899. We assume that there was a slight gap between 1886 and 1899 when Alex. didn't go to school, but he forgot to mention that. He graduated from Newton (New Jersey) High School in 1902; attended Peddie Institute in 1902 and 1903. After his first experience at Peddie, he worked in the wholesale hosiery business, in New York City in 1903 and 1904. We can't imagine Alex. being in the hosiery business, but he says it's a fact. He resumed his studies at Peddie Institute again in the year 1904, 1905, and 1906, graduating in June 1906. Graduated from Brown University in 1910, with the degree of Bachelor of Science and Civil Engineer. Worked with A. H. Konkle, County Engineer of Sussex County during the summers of 1908 and 1909, and from the time of graduation from Brown University, until September 1911. Worked with Salmon Brothers, Contractors, during 1912 and a portion of 1913; May 1913 to June 1917 with F. W. Salmon, County Engineer of Warren County.

He entered the employ of State Highway Department in June 1917 at Camp No. 1-B, Layton, N. J., on inmate labor work. Served with Twenty-Third Engineers, U. S. Army from December 9, 1917, to June 17, 1919. With A. E. F. in France from April 1918 to latter part of May 1919. He returned to the State Highway Department on July 1, 1919, being assigned to the Maintenance Division. On Aug. 30, 1920, he was made Acting Superintendent of Maintenance, and on Oct. 1, 1921, was appointed permanently to that position.

He was among the first to receive his license from the State Board of Professional Engineers and Land Surveyors, having received license card No. 22, and being licensed to practice as a Highway Engineer.

Alex. is not married, and while we are not running a matrimonial bureau, —

NEW JERSEY STATE HIGHWAY DEPARTMENT

August 1, 1922

Executive

HON. EDWARD I. EDWARDS, Governor
The State Highway Commission
and

THOMAS J. WASSER, State Highway Engineer
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H. D. ROBBINS - - - Central Division Engineer
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L. F. HALL - - - Chief Draftsman

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TESTING LABORATORY

R. B. GAGE, Chemical Engineer

J. G. BRAGG - - - Senior Testing Engineer
P. H. BAUMANN - - - Senior Testing Chemist

A Reversed Current

Prior to the late war, American road builders went to Europe to study the methods and types of construction used by engineers on the other side. Our text books on roads also were based largely on European practice. Every speech made by an American highway builder back in the nineties referred in glowing terms to the old Roman roads and to the excellent European macadam construction.

The situation now has been completely reversed by the road surface required to withstand motor vehicle traffic. But European engineers have been slow to change their methods of construction. The war had a good deal to do with this. The natural European conservatism evidently has been the main factor, however, in the retention of the methods and types of construction that stood up under slow-moving, steel-shod traffic.

American highway builders consequently no longer look to Europe for leadership on types and methods of highway construction and surfacing. Much still could be learned from Europe in the way of careful work and methods of maintenance. But the fast, economical American methods of building concrete and brick roads, and concrete base for other surfacing, have been very little used abroad until lately.

Last year a few road engineers from Europe came here to study our methods. This season at least 250 highway builders from abroad have come to see how we do it. Many of them have gone home only partly convinced that American methods are right. Few with whom we have come in contact will adopt right off our methods and the machinery required to make such methods economical.

Sooner or later engineers of other countries will come to realize that the vast program of construction in this country has made it possible to develop the best known methods of road building. The tide of visitors which already has set in from abroad then will grow rapidly and the United States will replace Europe as the mecca for the road builders of the world.—Successful Methods.

The Highwayman



"Joe" Tyman

Assistant Superintendent Plant and Equipment.

Joe is the man who says "yes," or "no," (after you have made an appointment with some important official at a distant point from Trenton) as to whether or not you can fill your engagement. Of course, it sometimes falls his lot to inform you that no automobile is available for your use. This is only done, however, after every possible means at his command has been exhausted to furnish the needed transportation.

There are times when the Equipment Division Office resembles a train dispatcher's office on a railroad, with half a dozen accidents blocking the main line. Between the truck drivers, passenger car drivers, and mechanics in distress, Joe has been known to be busy trying to answer two or three telephones at once. Such circumstances are not conducive to a sweet disposition, but Joe maintains a pretty even keel, even in a heavy storm of trouble. Joe says that his life, up to and before his connection with the Equipment Division of the State Highway Department as Assistant Superintendent of Plant & Equipment, was fairly happy.

He admits being born in Pennington, New Jersey, on September 3, 1892. When eight months old, he moved to Trenton and has been here ever since. He attended the Public and Parochial schools of Trenton, and Rider College, (nights).

Joe started out with C. V. Hill & Co., Refrigerator Manufacturers of Trenton, in various capacities, Mechanic, Foreman, etc., and left them to go into the Automobile business as Service Manager in a garage. He next went with the U. S. Emergency Fleet Corp., at Bristol, Pa., as Asst. Supt. of Equipment, Materials & Salvage Department. Was there three years, leaving this position to accept position with the New Jersey State Highway Department, May 25, 1920.

How They're Doing It In Canada

With a view to minimizing the danger of accidents, a list of "Rules and Courtesies of the Road" will probably form an integral part of the new license for motor drivers which the Ministry of Transport intends to produce.

The principal of these rules are:—

Drive carefully and considerately.
Never obstruct the free passage of the highway.
Permit faster vehicles to overtake you.
Drive as close as practicable to the left of the road.
Do not stop on bends or corners.
Do not reverse in congested thoroughfares.
Pass on the right or off side in overtaking other vehicles.
Never overtake at cross roads, or at bends of the road or down steep hills.

Give audible warning of approach whenever necessary.
Strictly observe all official road warning posts and signs and the direction of the police.

Safety Lesson by Miss Anne Rogers Sterling, Colorado, Wins First Honors in National Competition

A safety lesson by Miss Anne Rogers, a teacher in the public schools at Sterling, Colorado, designed to instruct children in safe behavior on the streets and highways, won first honors in the national safety lesson contest conducted in 1921 under the auspices of the Highway Education Board.

Miss Rogers' lessons was considered the best of approximately 40,000 to 50,000 lessons submitted by teachers of the nation. Her success entitles her to five hundred dollars and a trip to Washington, D. C., with all expenses paid.

The second best safety lesson was prepared by Miss Teresa M. Lenney, New Rochelle, New York, who received three hundred dollars. Two hundred dollars was given Miss Ida G. Ale, Trenton, New Jersey, who submitted the third best lesson.

The lessons by Miss Rogers, Miss Lenney and Miss Ale were first chosen as the best from their respective states, and submitted in competition with forty-nine other lessons, the best from each state and territory, for the national prizes offered by the National Automobile Chamber of Commerce.

Judges of the fifty-two state and territorial lessons were William Phelps Eno, Washington, D. C., President Eno Foundation for the Regulation of Highway Traffic; Dr. Thomas E. Finegan, Harrisburg, Pennsylvania, State Superintendent of Public Instruction for Pennsylvania, and W. J. Funk, New York, N. Y., Vice-president Funk & Wagnalls, publishers of the Literary Digest.

Miss Rogers' lesson follows:

A LESSON ON SAFETY TAUGHT IN CONNECTION WITH CIVICS WORK

Introduction

My class has been discussing the topic, "How the community aids the citizen to satisfy his desire for transportation", in the development of the lesson, the main thought developed was, "There could be no community life without good highways."

Upon questioning, the information was brought out that the public highways were not rendering the best possible service. Our improved means of transportation have increased speed, reduced the cost of commodities, brought the states of the Union closer together, but at what cost! The cost of lives, of limbs, of physical illness and mental anguish. Thus the introduction to a lesson in safety education was made possible and easy.

Teacher's Aim or Object of Lesson

1. To help the children realize the dangers that confront them in their play, work and everyday activities.
2. To show them what carelessness and ignorance cost in lives, injuries, health, happiness and progress.
3. To help them acquire habits of safety that will eliminate loss of life and limb.
4. To help them to help others to acquire these safety habits also.

Presentation

In order to arouse an interests in the topic, I asked the children to bring to class a story of an accident. They were to discuss the story according to the following outline:

1. Kind of accident.
 2. People involved (age, etc.)
 3. How the accident happened (causes).
 4. Results of the accident.
 5. How the accident could have been avoided.
- The recitation brought out the following information:
1. Almost every child had been in some sort of an accident.
 2. The greater number of accidents had been caused by:
 - a. Speeding in automobiles.
 - b. Riding bicycles on the sidewalk.
 - c. Running instead of walking across streets.
 - d. Hooking on to wagons and cars with sleds, etc.
 - e. Jay-walking on the highways.
 - f. Getting on and off street cars in the wrong manner.

- g. Glaring head-lights on cars.
- h. Failure to keep to the right.
3. Old people, middle-aged people and children had been in the accidents, but the greater percentage were children.
4. Many of the accidents had resulted in death, injury, physical illness from fright, and in many cases had cost a man his job.
5. Accidents could have been avoided if the people had not been careless and ignorant of traffic rules.

Mr. Hunter, a "safety first" man, employed by a railroad, was requested to give a talk on "Safety First Methods." During the course of the talk, he showed, by means of statistics, that the accidents on various railroads were decreasing every year because safety first methods were being used. He said that accidents to pedestrians and automobile drivers were increasing each year because they had not learned to think "Safety first."

The pupils were greatly impressed by his talk and his figures, and by stories of accidents that he had investigated. I dismissed my class that day with one question: "What Should You Know in Order to Avoid Accidents?"

The next day when the class came in, every one was ready with suggestions. One boy had a copy of the traffic regulations for the county and state, and suggested that each member of the class become acquainted with them, which they did, with him presiding as chairman, reading them and asking for explanations and suggestions from the class.

Another boy had his Scout manual from which he read the regulations to be followed in regard to safety and asked his classmates if they would pledge themselves to support these regulations. They did.

One girl had taken statistics from her class and found that eighty per cent of all the children were law-breakers; without exception the children all had jay-walked; seventy-five per cent of those who owned bicycles rode them on the sidewalk. There were only a few who had not "hooked" rides on cars or wagons.

The children became so interested in these statistics that they carried the figures into their arithmetic class and worked out a socialized problem in arithmetic on loss of life and limb as shown by city, state and national statistics. The main point gained by the lesson showed that the greatest number of people who were injured were pedestrians, i. e. in 1920, 1,000 occupants of automobiles were killed and 10,000 pedestrians were killed.

This knowledge awakened them to the realization that they as individuals and as pedestrians had a definite part to play in this "safety first" campaign, if the highways were to be made more safe.

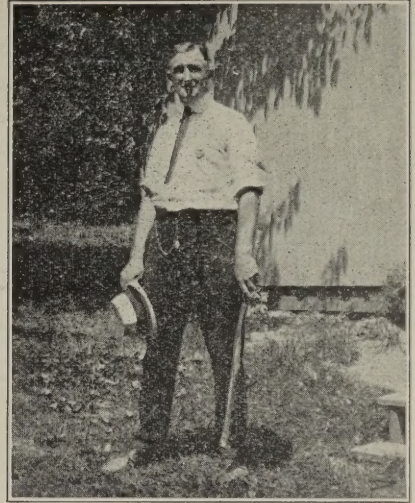
At the end of the recitation, I asked the following question:

"What Must You Do to Make the Highways More Safe?"

The next day each pupil brought a list of the things that he could do in order to make the highways more safe. Each one offered information on the subject, and a list of do's and don'ts was compiled by the class. Many of the rules they had learned from their own experience, others they had gotten from fifty large posters that I had hung in the room, showing results of "short cuts" and why it was better to practice safety first. Other facts came from books on safety education which I had ready for their use. These books were: "Sure-Pop and The Safety Scouts", "Safety for the Child," "American Book of Golden Deeds", "Prevention of Accidents and Safety Education" and "Twelve Lessons in Safety for the Automobile Driver."

The Safety First list compiled is as follows:

- I will not play in the street.
- I will not ride a bicycle on the sidewalk.
- I will not play in the railroad yards.
- I will not jump on wagons or cars.
- I will not run in front of street cars or automobiles.
- I will not hold an umbrella in front of my face while crossing the street.



Rattle Snake Gives Road Inspector Battle For Life

Comnty Engineer Ferguson Views Dead Reptiles—Largest Seen in Midvale

From up in the Erskine section of Midvale Borough comes the story of a bitter fight between John McMullen, a state road inspector, who resides in Paterson, with two six-foot rattle snakes, which attacked him from two sides, while he was covering his beat Saturday morning. County Engineer Garwood Ferguson of Paterson, who saw the dead reptiles a few hours after the battle, said that they were the largest he had ever seen.

According to the story McMullen nearly stepped on one of the snakes, when the latter coiled and made a lunge for his chest. He stepped aside just in time to escape certain death when his vision fastened on the mate, which was creeping toward him about fifteen feet away. Fortunately there was a club handy with which he dispatched the two terrors of the hills before they succeeded in doing him bodily harm. Police Chief Harry Post of Midvale, while in the Paterson court house yesterday morning, told of having witnessed the killing of an eight foot rattler with eleven buttons, on the main road near Redner's hotel situated above the overhead crossing in Midvale, last Friday. The snake was sunning itself in the roadway when a heavy truck happened along and ran over its body. Natives in the upper section of the county cannot recall a season when so many rattlers have been killed as in the summer just ending. Although rattlers have always been known to exist in the mountains extending from Pompton to Greenwood Lake, they were scarcely seen except in the remote sections. Just what has caused them to breed so abundantly this season no one seems to know. If they continue to breed as rapidly in the next few years as in this, the rattle snake will be regarded as one of New Jersey's domestic venomous snakes. At the present time there are only two poisonous reptiles in the state, the copperhead and the black snake.

- I will not cross the street in the middle of the block.
- I will not stand in the street while waiting for a street car.
- I will look in all directions before crossing a busy street.
- I will wait for the policeman's signal.
- I will help younger children on the highways.
- I will keep to the right at all times.

Each pupil pledged himself to practice these safety rules until the rules had become a habit and a part of their every day lives.

The question I asked for the next day's assignment was: "How Can You Help Others Establish These Safety Habits?"

In the development of the lesson members of the class decided that if they did the right thing, others would soon

(Continued on page 14.)

The Highwayman



Showing the recent improvements made on Sugar Hill Road, which runs directly from Atlantic City to Pennsgrove.

Sugar Hill Road, Atlantic County, New Jersey

The accompanying photograph of a reconstructed section of the direct road between Atlantic City and Pennsgrove (Wilmington) was taken at the extreme westerly end of the improvement looking eastwardly, and it shows the diverting of the road from its previous location over a grade crossing, which latter has been moved eastwardly to secure a better approach, improved vision and, generally, a much safer crossing. Previous to the reconstruction of the road, the travel to and from Atlantic City used the abandoned grade crossing along with another one about a mile to the east, and both of these are now eliminated for through Atlantic City travel; the grade crossing, as relocated, is used by travel to and from Ocean City.

The reconstruction of the road, including a new bridge over Babcock's Creek, was completed about August 1, 1922, by Sutton & Corson Co., on the road items, and S. S. Thompson & Co., Inc., on the bridge items. The road is

Warrenite-Bitulithic on a concrete base and the bridge is pile trestle of creosoted lumber throughout.

The banking of the curve, which deflects the road from its former location from the grade crossing, is well shown together with guard rail, drainage provisions, and other details; the re-located grade crossing appears in the distance and the new bridge is just beyond the crossing. Acceptance of the work marked the completion of a long continued effort on the part of Atlantic County authorities against considerable opposition on the part of local interests; the splendid improvement is now greatly appreciated by all concerned, and the State Highway Department is highly commended for its co-operation with the County in the undertaking, the work having been done under State-Aid contracts.

ALEXANDER HOWARD NELSON,
Atlantic County Engineer.



"My Guide"

Among the papers belonging to one Thomas Van Alstyne an engineer graduate of Cornell University, who was killed in the discharge of his duties, were these rules of conduct which he had drawn up and entitled "My Guide."

"My Guide" is so good, I am taking the liberty of reproducing it. It might very well be "My Guide" for a very great many of us. Here it is:

Loyalty. To respect my country, my profession and myself. To be honest and fair with my fellowmen, as I expect them to be honest and square with me. To be a loyal citizen of the United States of America. To speak of it with praise and act always as a trustworthy custodian of its good name. To be a man whose name carries weight wherever it goes.

Service. To base my expectations of reward on a solid foundation of service rendered. To be willing to pay the price of success in honest effort. To look upon my work as an opportunity to be seized with joy and made the most of, and not as a painful drudgery to be reluctantly endured.

Ambition. To remember that success lies within myself—in my own brain, my own ambition, my own courage

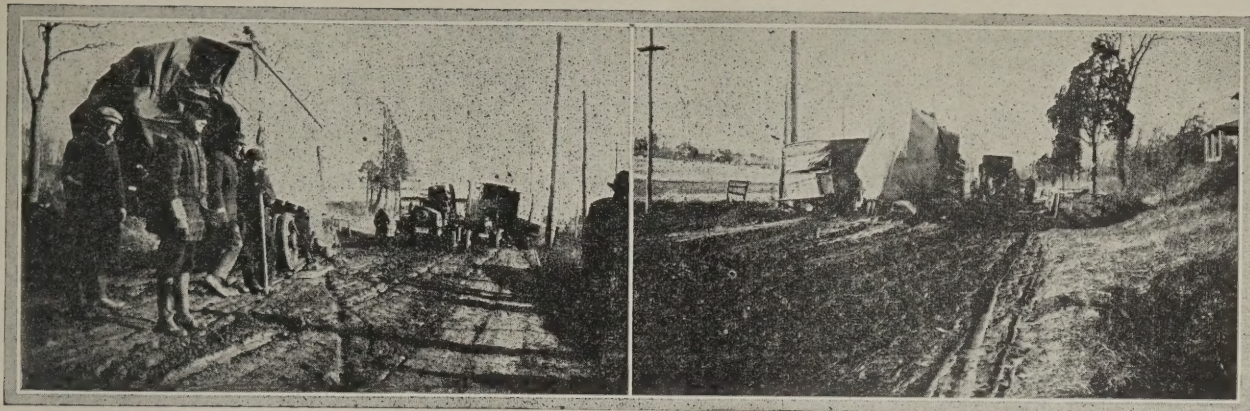
and determination. To expect difficulties and force my way through them. To turn hard experiences into capital for future struggles. To believe in my proposition heart and soul. To carry an air of optimism in the presence of those I meet. To dispel ill temper with cheerfulness, kill doubts with a strong conviction, and reduce active friction with an agreeable personality.

Study. To make a study of my business. To know my profession in every detail. To mix brains with my efforts and use system and method in my work. To find time to do every needful thing, but never letting time find me doing nothing. To hoard days as a miser hoards dollars. To make every hour bring me dividends, increased knowledge, or healthful recreation.

Elimination. To keep my future unmortgaged by debts. To save as well as to earn. To cut out expensive amusements until I can afford them.

Growth. Finally, to take a good grip on the joys of life. To play the game like a man. To fight against nothing so hard as my own weaknesses and endeavor to grow in strength as a gentleman, a Christian.

So I may be courteous to men, faithful to friends, true to God, a fragrance in the path I tread.



This shows the condition of the road between Red Bank and Middletown (Route 4) before it was taken over by the State Highway Department

How Some Contractors Might Improve Their Work

We asked Harry Robbins "what in your opinion could the State Highway Contractor have done this year to improve the progress and quality of his work?" This is what he said:

The construction season of 1922, the largest in the history of the State, has been a trying one to the contractor as well as to the engineer. Shortages of labor and materials, difficulties of transportation, delays in shipments, and so on are a few of the difficulties with which they have had to contend.

We will endeavor, in this brief article, to point out some of the things the contractor should do to facilitate the progress and improve the quality of his work.

Few contracts are secured without a bid submitted, and here's where some of the trouble begins. There are 57 kinds of ways in which a contractor can lose money on highway work, and his bid is one of them. He's beaten before the flag drops. Careless estimating and failure to analyze the many factors entering into a highway contract, and to anticipate to some reasonable degree the fluctuation of the market in the different materials required has given many a contractor a bad start, has disheartened him, and the job has suffered in consequence. Nothing succeeds like success, and an intelligent bid is one of the elements of success.

All plants and equipment should be in first class condition at the beginning of the season. All equipment should be overhauled during the winter or other slack time; that unfitted for service discarded; that worth repairing given careful attention, and worn and damaged parts replaced. The wants of the coming season should be anticipated, and orders for new machines placed far enough in advance that no delay in construction work may be caused by tardy delivery. The manufacturers will

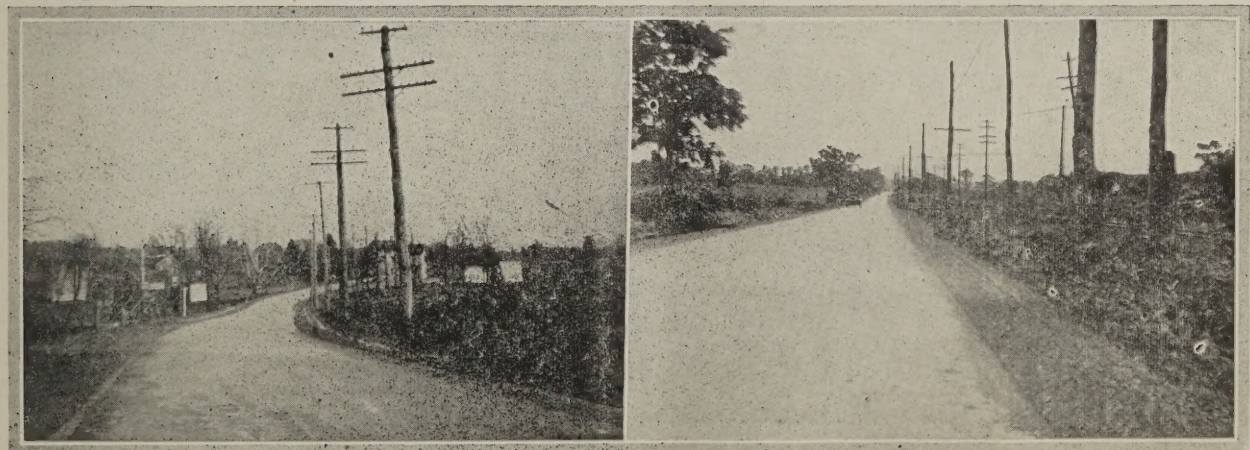
thank you for that, and the engineer will call you blessed. A complement of spare parts should always be on hand. Then a break of a minor part means but a few hours delay instead of days. The right machine for the work may mean progress.

Material orders should be placed early, and by early we mean as soon as practicable after the award of contract. First come, first served, with the material men, so they say. Make careful estimates of amounts of materials required, and follow up the shipments that delivery may be regular. Of course, in some cases, strikes, fires, earthquakes and other acts of Providence will militate against you, but at least you can keep your nose clean. Then, too, the quality of materials. Be assured that they meet the specifications, and buy with that end in view. The Department will thank you if you notify promptly of the source of supply. Inspection of materials is essential but sometimes overlooked by the contractor.

The matter of organization is often slighted. Efficient superintendents and foremen mean much to the quality and quantity of the work. Employ skilled labor where skilled labor is required. Don't send a boy to do a man's work. Well paid, contented labor means efficiency and increased output. Better for the contractor, better for the State.

Mode of procedure and laying out of plant is as important in highway work as in any other construction. We have seen an otherwise promising contract delayed by no reason, and profits turned into losses through poor planning of mode of procedure and laying out of plant. When the successful operation of the entire work depends upon the layout, is it not wise to give much thought to this matter?

(Continued on page 12.)



This shows the condition of the road, at approximately the same points, after being paved with modern, durable hard-surfaced pavement.

The Highwayman



Route 12, Section 2, showing the old and new alignment looking west towards Fox Hill.

National Road Building Forced by a Vast Increase in Motor Transport

By Ben. M. McKelway, "Trained Men"

Industrial America, outstripping in its rapid development the railroad facilities of the country, has found that the answer to a serious question of transportation lies in the motor vehicle. Last year it carried six times as many passengers, and 87 per cent as much freight as all the railways of the United States combined.

But in the solution of one problem, another and a graver one has been created. The railroad first builds its roadbed and then adds its rolling stock. In highway transport, the American public finds itself today in possession of more than 10,000,000 motor vehicles, representing an investment nearly four times greater than the amount spent in the last 10 years to provide a roadbed for that rolling stock. In the last 11 years the increase in motor registration has been 1,800 per cent., but the effective expenditures for road building for a corresponding period show only a 400 per cent. increase.

There is but one answer to this second problem—there must be a National Program for Building Highways. One is already in a fair way of being established through what has become a fixed policy for Federal aid to States. It involves the expenditure of billions of dollars for the construction of thousands of miles of good highways, and for the employment of trained men over a long period of years. Out of it has come the Roosevelt National Highway, with its 3,368 miles from the Nation's Capital to Los Angeles; the Lincoln Highway, extending 3,323 miles from New York to San Francisco; the Dixie Highway, 2,308 miles from Calais, Me., to Florida's favorite Miami; the George Washington, from Savannah to Seattle; the Mississippi Valley, the Pacific, the King of Trails from Canada to Texas—all of these but the beginning of a plan to lace America together with ribbons of brick, asphalt, and concrete.

Systematic road building in this country is newer than motor transportation. Expenditures from 1900 to 1910

were negligible, but since then the states, with Federal aid, have invested approximately \$2,526,000,000 in their highways. In 1910 the automobile industry was just getting on its feet; that same year saw the first boom in road building, the States expending about \$120,000,000. Two years later, the Government began its financial participation, appropriating \$2,000,000. The following table strikingly showing the increases from year to year since 1917, includes Federal funds:

Year	Expenditure
1904	\$ 59,527,170
1914	240,263,784
1917	279,915,332
1918	286,101,198
1919	389,455,932
1920	500,000,000
1921	767,000,000
1922 (estimated)	772,000,000

"The utility of the motor vehicle to a large extent is dependent upon the improved highway", says Thomas H. MacDonald, Chief of the Bureau of Public Roads of the Department of Agriculture. Mr. MacDonald has been called "the greatest spender in the country." Through his hands pass the millions appropriated by Congress for distribution among the states.

To illustrate that the vehicle and the highway are one and the same problem, he tells a story which might be labeled, "The Penny and the Cream for the Oatmeal."

"We have a coin of the realm, known as a copper cent, which is not greatly respected," he says.

"Our milkman drives a rather large truck. As I come down the stairs in the morning, I see that he has deposited on the front porch our daily portion of milk. Now I am particularly fond of what comes on top of that milk, and do not consider a day well begun unless I have oatmeal and cream.



Barber's Corner at Hackettstown. (Route 5, section 9) and construction work being done at that point.



Route 5, Section 2-A, between Hackettstown and Drakestown

"I figure that to me, as an average American citizen, the cost of the highway in transporting that milk, which I consider essential to my well being, is this little-respected penny, and the highway cost of all the rest of my food which is transported over the roads is nothing at all!

"That was the cost of the American highways to the individual man, woman, and child in this country last year, after deducting the exact revenue which the automobiles contributed in fees to the road built. The amount deducted does not include any of the intangible income from motor vehicles. Perhaps I am not exactly accurate, the cost may be about one and one-tenth cents, as near as we can estimate it. It does seem, therefore, that we can afford the highways.

"I have contemplated the poorest child in the poorest tenement district in New York City, wondering if we could decrease to him the bill of our American highways. Can we consider that to him—or to any one—the tangible personal benefit from our American highways is worth at least one copper cent per day for the transportation of food he eats.

Efficient transportation is necessary for the nation's existence. And the advent of motor transportation has put it, with the railroads and with the waterways, as a necessity. The problem concerns all, for all use the highways. To quote President Harding in his first message to Congress, "The motor vehicle has become an indispensable instrument in our political, social, and industrial life."

Have you ever thought just how indispensable an instrument the motor car really is?

Last year, according to figures compiled by the National Automobile Chamber of Commerce, the motor car carried 6,990,862,000 Americans over an area aggregating 70,820,000,000 miles. Motor trucks at the same time were carrying 1,430,000,000 tons of freight of every conceivable description over 6,479,200,000 miles. Three million automobiles and trucks are found today on the farms of the country. One hundred thousand doctors rely on the motor car to carry them back and forth on their errands of mercy. Last year something like 50,000 school children

were transported in motor busses, while 135,000 suburbanites were chiefly dependent on their cars to take them to and from their daily work.

Within the last 20 years farmers have gone further into the remote rural sections, their motor trucks establishing a connecting link between food production and the point of marketing. Records of the Department of Agriculture indicate that in many cases the farmer's haul to market has been increased from 6.9 to 17.6 miles, an expansion based entirely on motor-truck haulage.

The city man has gone far into the suburbs to escape the baneful effect of living in offensive, in many cases unhealthy, contact with factories. Conditions in any city show its central portions are being driven more and more to commerce and manufacturing, and that the residential section constantly moves further and further into the suburbs.

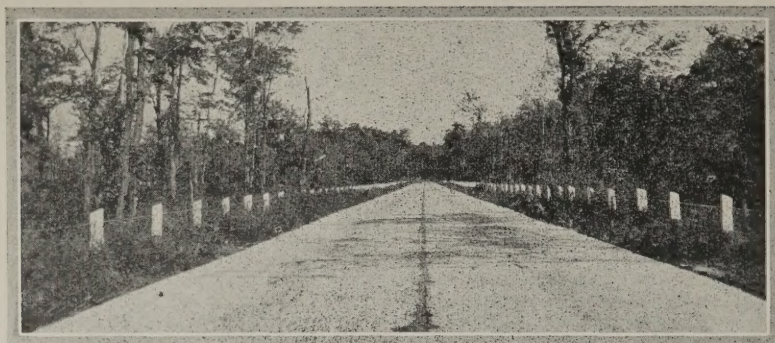
So much for some of the accomplishments of motor transportation in a half score of years. But what of the future? Mr. MacDonald says the utility of motor transportation is dependent upon the improved highway. What must we do to expand this utility?

"It is possible," Mr. MacDonald points out, "to comprehend something of the physical and financial undertaking involved in the completion of a great building or a great bridge, because each may be within the range of vision. But who can adequately picture to himself the immensity of the highway improvement demands now being made within the United States, to say nothing of those of our territorial possessions? No other nation has ever undertaken to supply adequate transportation facilities to an area of over 3,000,000 square miles. France has an area of 212,654 square miles, Germany 208,780, while the borders of Texas alone enclose 262,398 square miles. Our states are empires in their extent, and the whole future of this nation will be largely modified and determined by the factor of transportation, including in this sense, all forms of interchange, as we today have them and know them. "There are no precedents from which we may accurately estimate the total cost of pro-



Construction on Main Street, Summerville (Right) loading stone on trucks for paving work.

The Highwayman



Route 5, Section 2, between Budd Lake and Drakestown

viding necessary improved highways, but the financial aspects are even now so large as to demand the most careful and scientific policies which may be determined. As the costs accumulate from year to year, the increasing demands upon the financial foundation will cause failure, unless Government policies are properly determined and planned for the future.

"No reason can be offered for not planning well for the future, for we are yet near the beginning of highway building activity in its major sense. There are not the same uncertainties that confronted the railroad builders. The early railroads were built largely on the strength of prospective and to an extent problematic traffic. The highways are being built for a traffic already waiting.

There are plenty of evidences that the taxpaying public is rapidly nearing the end of its ability, or at least of its willingness, to act further in the capacity of a shock absorber. Too many public enterprises have been saved from bankruptcy only by calling on the public treasuries for additional funds to wipe out the deficit between estimate and cost, between income and outgo. There is no reason why the highways should not be placed in the self-supporting class. They are not a luxury nor an incidental, but one of the indispensable facilities to all phases of the life of the nation and of the individual. The highways are possessed of a real earning capacity, and this must be recognized, collected, and credited to them."

The present Highway Building Program, entertained by the Bureau of Public Roads, contemplates 180,000 miles of roadway, of which funds for the construction of about 71,000 miles, or nearly 40 per cent of the total, have been made available. No time has been set for the ultimate realization of this national program.

If the Federal Government is willing to spend \$50,000,000 a year, it may take 20 years. If Uncle Sam can spare \$75,000,000 from the Federal treasury each year—assuming the states will pay 58 per cent of the total road-building cost—the job can be completed in 15 years. If the United States Government is willing to spare \$100,-

000,000 a year, assuming the states bear their proportionate cost, the work can be done in 10 years.

The Highway Building Program contemplates a national system of roads. Motor transportation has made this a necessity. The time has passed when the Federal Government will appropriate funds for the states to spend as they please in improving and building their own inter-county or town-to-town systems. We have passed the stage when one community can be considered, and reached the point where the country as a whole must come within the program.

When the 180,000 to 190,000 miles of road contemplated are completed, they will connect practically every county seat in every state, and will also connect at state borders with those from other states. Eventually, it should be possible to drive from any county seat in one part of the country to another like point in any other part of the nation without leaving a Federal-aid highway.

Apparently Federal aid to the states has become a fixed national policy, for on June 19 last, President Harding signed the Post Office Appropriation bill, authorizing an additional fund of \$190,000,000 for that purpose—\$50,000,000 being authorized for the present fiscal year which began June 1; \$65,000,000 and \$75,000,000 respectively, for each of the two succeeding fiscal years. It is estimated that this \$190,000,000 will result in the construction of more than 25,000 miles, which, added to the 46,000 miles expected to result from previous appropriations, makes a total of 71,000 miles, or nearly 40 per cent of the estimated 180,000 miles of road in the Federal-aid system now being outlined. To match the \$287,500,000 of Federal funds involved, the states have appropriated \$380,000,000, making a grand total of \$667,500,000.

There is, perhaps, no wider field for specialized employment in industrial America today than that which has been opened by the impetus given to highway construction. It has been reflected so far in the amount of attention being given by federal and state highway commissions to increasing and improving their personnel. The volume



Concrete mixer in action on Summerville North Branch road. Route 9 Section 8 (Right) Truck dumping concrete aggregate into mixer on the job.



A View From Route 5, Hackettstown-Drakestown Road

and character of motor-driven traffic today has rendered obsolete much of the so-called science of road building. Only recently has any attention been given to the importance of highway transport in its relation to highway engineering and highway economics.

The problem created by the lack of trained men to carry out the vast road-building program of the future, and to adapt it to the new science of highway transport, has brought about the formation of the Highway Education Board, which was created to recommend courses in highway engineering and highway transport, and to undertake researches into the problems presented in highway engineering and transport.

For the year 1921-'22, this committee learned by a recent survey, that 8,709 students were listed in 114 schools as preparing for civil engineering. Of 1,870 who were members of the senior class, more than one-fourth or 503, had indicated a desire to specialize in highway engineering. Only 48 out of the 114 schools reporting permitted or indicated special courses in highway engineering.

Suppose, by a generous estimate, we double the number of seniors last year who actually testified to their desire to specialize in highway engineering. There would be around 1,000. A pitiful small supply to meet an ever growing demand!

Lewis W. McIntyre, Assistant Professor of Civil Engineering of the University of Pittsburgh, and a member of the Society for the Promotion of Engineering Education, calculated recently that there is already a demand for 9,600 men with engineering training employed by highway bodies in the United States outside of county and municipal organizations. Of this number 10 per cent. are needed as replacements each year.

In addition to technical knowledge the highway engineer must know the fundamentals of practical road building. He must have a fundamental knowledge of the motor vehicle, and a fundamental knowledge of methods of highway transport. His field is virtually unlimited.

The highway transport engineer must solve the problems of the future in motor transport, must anticipate the trend and direction of city and suburban traffic, must know how to relieve congestion resulting from the steady increase in rolling stock. He must know the limitations of the motor vehicle, be familiar with its mechanical upkeep, its operating economics, and its adaptability. He must solve the problems of the community or the group of shippers employing him and be able to tell what roads should be improved. He must select the best routes, the best equipment, and he must reduce the operating costs for owners of motor truck fleets.

The rapid growth of the motor industry has far outrun the number of available trained men, and the future of this, now the second largest industry in the country producing the finished article, is limited only by the actual production of motor vehicles and the construction of good roads.

The time will come when the one road cannot serve the speeding passenger car and the lumbering motor truck. Separate roads must be built between congested centers to serve both needs. Our cities, built with their short corners and crooked streets to serve the slow, horse-drawn traffic of another era, must eliminate their rapidly increasing street congestion by the construction of private rights of way, improved terminal facilities for fleets of trucks, and by the designation of heavy and light traffic streets.

The men to bring about this great development are here. As the pioneers of a generation or two ago, who with grim and unhesitating valor packed their belongings into covered wagons and took their families with rifle and dog, out into the open, they are ready to pioneer a new age. But to their number must be added others who must be summoned to this pioneering of a new industry, and must be trained for this tremendous, noble calling.

For "the cause of the highways is everybody's business, because it is everybody's benefit."



Greenwood Avenue, Trenton, showing pavers laying stone blocks between trolley tracks (right) intersection of Route 1 and Nottingham Way in City of Trenton, about one block from the entrance to the Interstate Fair grounds. Close cooperation between the State Labor Division and the Contractor was necessary to get this job completed in time for the Fair traffic.

The Highwayman

Prevention of Accidents

Employees of the State Highway Department as well as Contractors and Contractors' employees, may read with benefit and interest an article on the above subject in the August issue of the *Contractors' Atlas* by H. G. Jacobson, Manager, Bureau of Accident Prevention and Insurance of the Portland Cement Association, extracts from which are quoted herein.

"Accident prevention is a dream that has come true. Fifteen years ago some farsighted men dreamed they could help men to avoid personal injuries by teaching employers to protect and safeguard their men and by educating the men to be more careful. A lot of the employees said it was nonsense—couldn't be done. A lot of employers laughed at the idea—but the dreamers kept at it. They showed employers that safety was a moral obligation they owed their workers, and that accidents were a needless expense to the firm; these dreamers showed the workmen that a full complement of eyes, arms and legs was a moral obligation they owed their families who depend upon them for support. It was a good idea and the pretty part of it was that it worked. Accident prevention is not a dream now—it is a fact and employers and men who do not practice it are blind to the humanitarian and financial advantages that come with it.

Accidents, whether they happen on the street, in the factory or on your contracting job, constitute a menace to the general well-being of us all. The efficiency of any organization depends in part on the elimination of the demoralizing occurrences such as the accidental killing or injuring of employees.

The complexity of the world in our day does not allow us to put our mind to sleep with the thought that what does not happen to ourselves does not concern us.

When an accident happens there is damage to pay directly in dollars and cents, and we all share in the payment of the load that must be added to the price of our products.

Prevention of accidents is first of all a humanitarian duty and furthermore, it is good business. Possibly the smallest loss is that which shows up under direct payment of the compensation claim. Demoralizing of the working force with consequent decrease in production is likely to be of greater financial importance to the contractor and builder. Particularly on the smaller job is this fact outstanding. If on a job of 10 men one is injured, the job is just 10% under-manned and possibly even more actual-

ly if the injured man happens to be one on whom the progress of the other men's work depends."

Most of the hazard connected with highway construction and maintenance work is in connection with motor vehicles, machinery, and equipment. Danger from the operation of motor vehicles and machinery can be largely overcome by due regard to proper dress of the operators, and by a few well emphasized directions calling attention to the danger of doing certain things that from past experience has proven disastrous, as, for instance, the cranking of an automobile when left in gear, too great dependance upon brakes which wrongly encourages too close figuring upon the actions of others as well as the ability of the operator to stop when necessary to prevent an accident.

There is a decided tendency to mark all commercial motor vehicles warning of danger to any one attempting to climb on while moving. "In order to develop a proper safety campaign for any job an analysis is necessary, for the work itself is suggestive of the kind of possible accidents. It is plain that proper and substantial equipment must be provided which possesses a good safe factor. Even a man's clothing must be given attention, for many a man has lost a hand by reason of wearing a gauntlet glove, and others have lost arms and life because a loose sleeve or glove dangled into revolving drums or gears.

A dangerous machine is a potential liability which sooner or later becomes actual if not remedied. The same is true of a careless man and where uncorrected hazards exist there are quite sure to be careless men, because the careful ones don't stay, they can't afford to. They go where they are reasonably protected from accidents.

By a final analysis we come to the conclusion that there are only three elements entering into any accident.

The three elements are Men—Methods—Material. The three "M's" in our safety school as the three "R's" in our grammar school, form the foundation for all future activities. With the three "M's" we may even make a finer division, and claim that there is only one "M" entering into all safety work and that "M" stands for Men. Methods are determined on by Men, and material is placed by Men, whether the method or material is of the right kind depends upon the man applying it.

If 200 men are working on a job, 200 men must co-operate if accidents are to be prevented. One man's carelessness and lack of co-operation may spell injury and death to many.

(Continued from page 7.)

Each part of the work should have its time of completion and be completed somewhere near to schedule. An allowance for weather and tardy delivery of materials taken into consideration. Otherwise, how would the contractor know if he is to complete within the time specified in his contract. The old days of beginning with the cross drain and ending with the slopes and shoulders, and heavens send us an extension of time are past. The modern contractor is essentially a business man and his work must be carried on in a business-like manner.

The slighting of construction details is the thorn in the engineer's side. It is this one thing more than any other that ruins many an otherwise excellent piece of work.

The contractor's attention and the attention of his subordinates should be always directed to those details too insignificant in themselves, yet so greatly do they effect the finished work. Much excellent material has been spoiled by improper use. We will not mention these details here for they are an old story. What excuse can the contractor offer for this neglect?

It is the contractor's duty to familiarize himself with the requirements of the plans and specifications, and to see that his superintendents and foremen do likewise. Many times we have heard the old story "didn't know it was the specifications." It was once upon a time supposed that no one but the man who wrote things could interpret their hidden meaning and he wasn't sure. Don't leave it all to the inspector. Let the contractors have their men study the specifications, perhaps they will find something they did not know was there.

The Right to the Right of Way

If every automobile driver will adhere strictly to the code of giving the car on the right, the right of way, many of the fatal automobile accidents that shock the readers of the daily papers every day can be avoided.

This is the opinion of Dai H. Lewis, acting executive chairman of the American Automobile Association.

Says Mr. Lewis, "The rule of the road, both in the city and in the open country, is that the driver on the right has the right of way, and there should be a severe punishment for any person who violates that rule.

"The increasing number of automobiles that congest traffic in the cities brings more and more to the front the question of right of way. Most cities provide in their ordinances that the A. A. A. system of giving the road to the man on the right except on through boulevards, shall be effective, but unfortunately it is not always observed. There is always the fellow who is willing to 'take a chance' in order to display his driving skill, or to 'show off' before some fair companion and this type of driver should be the target for every policeman's attention.

"Automobile driving should be a pleasure. There is seldom an occasion where extreme haste is necessary, and the motorist loses mighty few seconds in observing the rights of the man on the right. After you reach the hospital or morgue, it doesn't matter much who had the right of way, but a little patience would avoid many a run for the ambulance, and many an operation for the surgeon, as well as considerable physical pain for the driver who forgot to consider the other fellow's right to the right of way."

Highway Widths

It is but a very few years, indeed, since the recognized standard highway requirement was eight feet of width per stream of traffic. This naturally resulted in the 16-ft. standard width of roadway, so long and so generally employed throughout the country, except where traffic was of extreme density. The 1922 Good Roads Conference developed a consensus of opinion that 22 ft. should be the minimum width of roads now being built, and that in most instances trunk highways should be 30 ft. wide.

This probably represents sound judgment. Highway building programs of the past, like many other great activities, have suffered more from lack of vision and from inadequacy than from too ambitious planning; and it is quite possible that we are even yet failing to appreciate future requirements. True, there are many associations and certain concrete evidences that this country has about reached the saturation point of motor passenger vehicles, but quite clearly we have not reached the saturation point of industrial vehicles, nor have we probably attained to a maximum use of our highways.

Increased speed alone requires changes in our designs, and we believe that the 20-ft. minimum will not be lowered for ordinary standard usage. We are inclined to think that each case requiring greater width will involve special study and determination. The single 30-ft. or wider pavement will continue to have its uses, but there will probably be many instances of special designs, and of separate pavements carrying segregated traffic.

In common with many others, the editor used to think that 66-ft. and 100-ft. rights of way for public highways involved unreasonable extravagances. In certain instances such probably are extravagant, even now, but for main highways the greater widths are clearly necessary. Not only should there be sufficient width to permit of the widening of pavements and segregation of traffic as may hereafter be necessary by reason of increasing volume, but there should be a space at each side for purposes of control and beautification. The 100-ft. right of way is today proving a blessing in many instances where it was once derided.—*Road and Street News*.



Tests Disclose Where Motorists Waste Gas

Washington, D. C.—Most motorists fail to get as much mileage as possible out of the gasoline they consume because they have never learned to operate their cars properly. The common practice of waiting to shift gears on hills until the car has almost come to a stop is one of the principal causes of waste of gasoline. According to the Bureau of Public Roads this fact is shown by tests conducted by Prof. T. R. Agg of Iowa State College in co-operation with the Bureau under the auspices of the National Research Council.

The tests were made primarily to discover the effect of various kinds of highway surfacing material and different grades on gasoline consumption. The conclusion with reference to faulty driving is merely incidental to the tests, but it is one which will mean money in the pocket of every man who drives a car if the advice of the Bureau is heeded.

The vehicles used in the tests were equipped with an ingenious device which makes a continuous record of the gasoline consumed as the vehicle moves over the road and another which makes a simultaneous record of the speed at every instant. Suitable sections of road were selected for the tests and the exact grades of these sections were determined. The specially equipped vehicles, both trucks and automobiles, were then driven over the various sections taking the records of the gasoline consumption and speed with the two instruments described. Several trips were made over each section, and the rate of fuel consumption and speed for each trip were plotted on a graph with the profile or grade of the road. It is these diagrams that show the effect of delayed shifting of the gears on hills.

Exact instructions for the most economic driving will

vary with the make of the car or truck but the following pointers will be of value to all motorists: In ascending a hill don't wait until the last second to shift to a lower gear. If you do you will not only lose speed and overtax your engine but you will also consume more gasoline.

The tests also showed that in going down hill it is cheaper to retard the speed with the brake than by leaving the clutch in. Free coasting should begin so as to attain the maximum desired speed at the foot of the hill and continue for a distance to take advantage of the momentum attained. With more knowledge concerning economic driving a considerable reduction can be made in the 4,000,000,000 gallons of gasoline consumed each year. —*Highway News Digest*.



Disgraceful Village Streets

There are 15,450 "incorporated places" in America. Of these 15,450 cities, towns, and villages, only 2,800 exceed a population of 2,500 people each; yet these 2,800 "urban places" contain 54,000,000 people, while 12,900 "rural places" contain 9,000,000. Nearly all the 9,000,000 residents of the 12,900 "rural places" live on unpaved streets, and the same holds true of a large percentage of the residents of "urban places." There are no statistics to show how many miles of streets there are in the 15,400 "incorporated places", so that we can not estimate accurately the percentage of unpaved streets.

Even without such statistics to indicate the extent of unpaved streets, it would be evident enough to anyone who travels much that most of our small towns are very inadequately paved. Mud half the year and dust the other half are characteristics of their streets.

When we grow unduly elated over our progress in paving our highways such facts as these should bring us to earth, yes, literally to earth—to the dirt streets, that are typical of most of our small towns and villages, and, also, of many of our larger cities.

We read repeatedly of overproduction in this, that or the other sort of industry. There are too many coal mines, too many iron furnaces and mills, too many motor car factories, too many textile mills, too many farms, too many stores, and so on through nearly every sort of productive and distributive business. It seems rarely to occur to anyone that such excess capacity of production exists solely because of failure to direct capital and labor into enterprises where there is an excess of latent demand over the present supply. By latent demand we mean potential demand, demand that may not exist at the present moment, but that can be easily aroused by proper educational and publicity efforts. There is unquestionably a great latent demand for better streets and roads, for most of our highways are not only a disgrace to us, but a very great economic burden, because of their disgraceful condition.

Is it not "up to" the civil engineers of America to lead the way in arousing the latent demand for improved highways? Are they not the logical propagandists of all economically needed public works?

We believe that most civil engineers would reply affirmatively, yet continue to act negatively. Money is needed both for economic investigation and for educational propaganda. Engineering societies have too little income even for their needs. How, then shall they form public opinion when it costs much money to do so? The answer appears to be that engineering societies must solicit funds for such purposes from public spirited men of wealth.—*Road and Street News*.



Maybe It's the Exception Which Proves the Rule!

"Figures won't lie," declared the statistician.

"Maybe you are right," answered the mild-mannered citizen.

"And yet, somehow, I can't put implicit faith in the numbers that go up on a taxicab register."

The Highwayman

(Continued from page 5.)

do it also. That was the first step to take. Next they must warn little children and others of dangers on the highways, explaining to them why they should cultivate habits of safety. They decided to try to break the bad habits of the pupils in the school by establishing safety patrols during Safety Week, both inside the building and on the highways around the building.

One day, before this campaign started, I had the city photographer come to the school house and take pictures of the pupils passing to and from classes, and as they were dismissed at noon. When these pictures were developed, I brought them into class and hung them by the side of the posters on "Safety First." You can imagine their excitement when pupils found they had been photographed riding bicycles on the sidewalk, jay-walking, running, and passing with a great deal of confusion in the hall. Naturally they were all pleased to find that the other fellow had been caught, too. They took these pictures from room to room in the building, and showed to the pupils in the other grades the risks they were running every day and gave a short talk on the safety campaign, telling them the object of it, how they could cooperate, and about the safety patrol that was to be in the halls and on the school highways to help them to break their careless habits and acquire safety habits. Of course, they gained the hearty cooperation of the rest of the school.

Traffic policemen were appointed from among the pupils to take posts at the doorways, steps, and hallways to guide the children as they came into the building in the morning and at noon, and as they passed to and from classes, and when they were dismissed. The duty of the traffic policeman was to see that all pupils walked down the steps one step at a time, to prevent congestion in the halls, and also to explain to any who disobeyed these rules the danger to themselves and others.

Outside the building the traffic policeman's duty was to see that no one rode bicycles on the sidewalk, that no one jay-walked, that all kept to the right, and observed the general safety code.

The school building is very centrally located, and before

long the safety patrol began to attract the attention of passersby. Upon several occasions citizens were asked to cooperate with the safety committee. Before the week was over every adult knew that he was being watched in his movements on the highway, and it was surprising to hear the favorable comment that came to us from various sources. Many citizens were made to feel that an example was being set by the younger people, which they were in honor bound to follow.

The photographer came again to the school at the end of the safety campaign and took pictures at the same places. When these were developed we hung them on the other side of the safety posters, and when each child had pledged himself to keep the safety regulations and to acquire safety habits, so that the highways could be made more safe, the first pictures of confusion and lawlessness were removed.

It is one thing to have knowledge and another thing to know how to use it. Almost all of the information brought out in this lesson was information that the majority of the children already knew. However, it was not organized in their minds, and it had not been impressed upon them that their failure to use this information was making the highways unsafe.

The lesson in safety education helped the children to organize their material, taught them how to use this information, and how they could play a definite part in making the highways more safe.



A Slogan

Bite off more than you can chew,
Then chew it.

Plan for more than you can do,
Then do it.

Hitch your wagon to a star,
Keep your seat and there you are!

—Pittsburg Christian Advocate.

Service to Builders of Good Roads

JOHN C. BRAHNEY

THE BOND MAN

20 Clinton Street, Newark, N. J.

'Phones Mitchell 1177-1178

**SURETY
BONDS**

**LIABILITY
INSURANCE**

Personal attention given to highway contractors
requiring surety bonds and casualty insurance



In front of Seaview Golf Club, near Atlantic City, (Route 4)

Warrenite—Bitulithic Pavements Have Stood Up Under Heavy Traffic For 15 Years

The test of the paving is in the riding—and the cost of upkeep.

Upon *either* of these points we invite your critical investigation.

Some of the oldest paved roads in New Jersey were laid under the Warren patents.

Many of these have been in constant use *under heavy traffic* for fifteen years. They are still in excellent condition.

"The Best Road You Can Buy Is the Cheapest in the End."

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ESTABLISHED THIRTY YEARS

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The Highwayman



NOT merely one improved highway, but a network of smooth, dustless, economical roads--this is "The Magic of Tarvia."

The Magic of Good Roads--

HALF a century ago the railroads reached out into the wastes of the continent--tapped reservoirs of undeveloped wealth--lifted the pall of isolation from frontier life.

Today improved highways are completing the work that the railroads then began--are doing for individual districts what the railroads did for the country as a whole.

The old-time "isolated community" is rapidly vanishing. In its stead are seen progressive towns and villages--centers of ever-widening circles of business activity. This is the magic of good roads.

Nor are the benefits confined to towns and villages. Good roads make farming more profitable. They bring

to the farmer and his family greater social advantages and better educational facilities. They make farm life more attractive.

Yet with all their blessings, good roads need not be expensive. Whether for residential streets or country highways, Tarvia is the quickest, surest, most economical way to all-year roads, free from mud, dust and ruts and proof against water, frost and traffic. It is a coal-tar product made in grades to meet every road condition.

One Tarvia road in your community will prove to you and your townspeople how good roads, with all their benefits, can be had at low cost.

Illustrated booklets free upon request

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For Road Construction
Repair and Maintenance

The *Barrett* Company

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H. M. Smith, . . . No. 96M, Riverton
C. C. Randolph, . . . No. 2466, Plainfield
Ashley Burner, . . . No. 2232, Plainfield

GLUTRIN

Four Reasons Why All Gravel Roads Should Be Treated With Glutrin

First: GLUTRINIZED gravel roads are hard ALL THE YEAR ROUND.

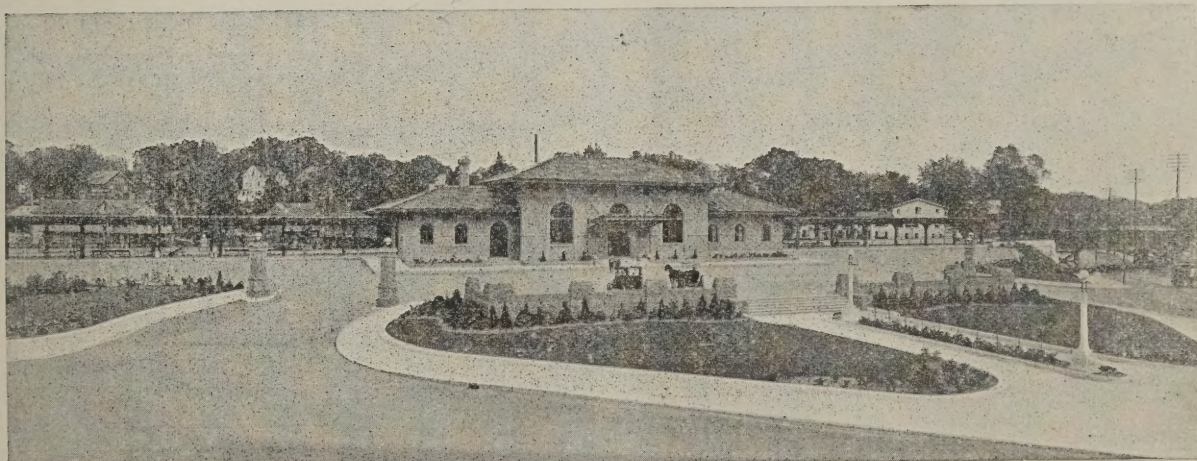
Second: GLUTRINIZED roads SHED WATER—and for that reason they do not rut up during the winter and Spring.

Third: Glutrin is the best BINDER yet discovered for gravel stone, sand-clay, or slag or earth roads.

And finally: Glutrin is not only the BEST binder, but by far the most economical.

Glutrin has been manufactured by us in our own plants for over 15 years. We have our own tank car line in which to deliver the product. The material used in New Jersey was applied by Mr. M. R. Young, Trenton, N. J., with pressure distributors especially built to handle this product.

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Ride on *Amiesite*

the economical and durable bituminous pavement. **ECONOMICAL** because it is easily laid and maintained. **DURABLE** because of its resilient and wear-resisting qualities.

Roads paved with Amiesite have withstood traffic for years without repairs.

Our plants have a capacity of one-half million yards of pavement annually.

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The Highwayman

SERVICE

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IN USE SINCE 1889

Dragon
PORTLAND CEMENT

STRENGTH and UNIFORMITY

For Information and Prices—Write

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302 Broadway, New York, N. Y.

SERVICE

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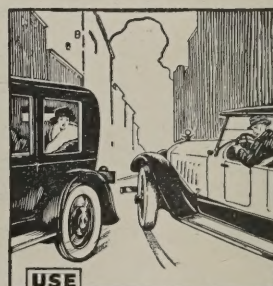
It's the Last Fraction of Control

that often saves the motorist. And with Concrete pavement, that fraction is available for you.

Good brakes, good tires, good driving—all are necessary, but above all there must be a skid-proof pavement.

Concrete streets are skid-proof. Tires can grip the firm, gritty surface even in wet weather. Concrete is clean, permanent, hole-proof—a pavement after the motorist's and home owner's own heart.

Our Booklet R-4 tells other interesting things about Concrete Streets. Write for your copy.



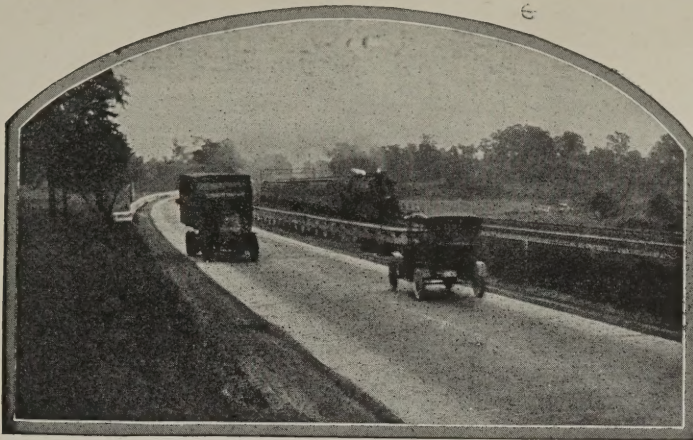
**USE
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PORTLAND CEMENT ASSOCIATION

347 Madison Avenue, New York

A National Organization to Improve and Extend the Uses of Concrete

Offices in 23 Other Cities



(Courtesy Portland Cement Association)

When Vulcan Made 'em, They Lasted Forever

Vulcan was the blacksmith of the Gods on high Olympus.

The things he forged in his mighty smithy lasted forever.

Neither time nor tempest, age nor rust, could

destroy their everlastingness!

In that, they were similar to roads built of "Vulcanite"—the cement that is made in our giant plant at Warren Co., N. J., with its capacity of 2,000,000 barrels a year.

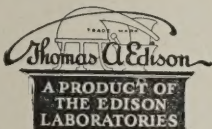
"Let's get together and talk Cement"

VULCANITE PORTLAND CEMENT CO.

PHILADELPHIA

BOSTON

NEW YORK

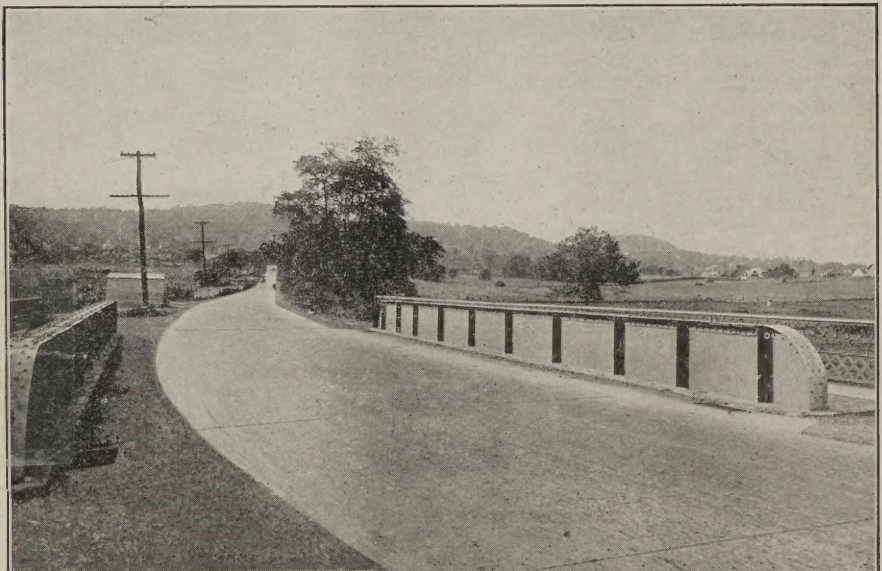


Hamburg Ave.

Paterson,
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Contractor:

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Edison Cement for All Seasons

EDISON PORTLAND CEMENT

Used Exclusively in Construction of This Road

EDISON PORTLAND CEMENT COMPANY
NEW YORK BOSTON PHILADELPHIA

ALONG THE ROAD



Auto Courtesy

Automobiles in all parts of the United States will soon be bearing on their windshields a little green and white sticker with "AUTOMOBILE COURTESY" in large letters over the name of the local automobile club indicating that the driver of this car is observing the courtesy campaign being conducted by the American Automobile Association in connection with the Chicago Automobile Trade Association and the National Automobile Dealers Association.

"We believe that 50% of the automobile accidents which happen on the highways of the United States could be avoided through the use of a little automobile courtesy", said Dai H. Lewis, Acting Executive Chairman of the A. A. A. "Courtesy costs nothing and brings greater results than any other element entering into the driving of an automobile.

"Real automobile courtesy demands that we give the other fellow his share of the road; that we dim our lights when meeting another car at night; that we recognize the fact that the man behind us blowing for the road wants to get by and is not challenging us to a race; in short it means being agreeable in all these little things that go so far toward avoiding friction."

The American Automobile Association in taking up with its three hundred affiliated clubs the question of carrying on this campaign is impressing the need for careful observance of traffic regulations as one of the elements of a courtesy campaign. The traffic officer, the Association points out, is only a human being placed in a difficult position because of the necessity of enforcing these regulations, and a little courtesy toward him will eliminate many of the more trivial arrests that now clutter up our traffic courts.

The whole operation of the courtesy campaign, the A. A. A. points out, depends entirely upon the old principle of the golden rule, "Do unto others as ye would that they should do unto you."



*"Slowly and sadly we laid him down
And we spoke not a word of sorrow."
He told us before he'd surely have
His brake bands fixed—tomorrow.*

—Bay City Motor News.

BOROUGH OF BEACHWOOD OCEAN COUNTY, N. J.

New York, Oct. 2, 1922.

State Road Commissioner, Trenton, N. J.
Dear Sir:

I wish to take this opportunity of expressing the appreciation of the people of Beachwood, Ocean Co., N. J. to the way your Department has main'tained the State Highway through the Borough of Beachwood. It is the best piece of road of this kind, (gravel road) that the writer has seen anywhere and it has been favorably commented on by a great many people.

Yours very truly,

(Signed) EDWIN D. COLLINS

Mayor of Beachwood, N. J.

E. D. C.



Good Reason For It!

We heard the other day of a contractor who stopped in the office of a State Highway Department and remarked to the Chief Engineer that he did not seem to be quite as tall as the contractor had pictured him. "No," replied the engineer, "I have been recently married and have settled down quite a good deal."—*The Juniata Company News.*

Good Roads Have One Drawback

It's nice to live in the country—nice for your city relatives when the auto season gets in full swing. It's pretty hard for a country cousin to get out of reach of the auto.

It's a Real RARA AVIS, All Right!

A prospective buyer walked into the garage and said to the proprietor: "I would like to see a first-class second-hand car."

The proprietor looked at him, and smiled as he replied: "So would I, brother."—*Jack-O-Lantern.*

On the Sabbath so drive your car that when the roll is called on Monday morning you can say, "Glory be, I'm still here."—*Akron Motorist.*



This shows the relocation of Route 5 on the side of Schooley's Mountain near Hackettstown. Even the photograph gives some idea of the wonderful scenes along this road. No wonder the Sunday traffic is heavy!